

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Atty 427-83
Dkt.

C# M#

SUGIYAMA, M. et al.

TC/A.U. 1745

Serial No. 10/659,358

Examiner: Wills

Filed: September 11, 2003

Date: October 24, 2006

Title: SEPARATOR FOR LITHIUM ION SECONDARY BATTERY AND LITHIUM ION
SECONDARY BATTERY AND LITHIUM ION SECONDARY BATTERY PROVIDED
THEREWITHCommissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE/AMENDMENT/LETTER

This is a response/amendment/letter in the above-identified application and includes an attachment which is hereby incorporated by reference and the signature below serves as the signature to the attachment in the absence of any other signature thereon.

☐ **Correspondence Address Indication Form Attached.****Fees are attached as calculated below:**

Total effective claims after amendment 0 minus highest number
previously paid for 20 (at least 20) = 0 x \$50.00 \$0.00 (1202)/\$0.00 (2202) \$

Independent claims after amendment 0 minus highest number
previously paid for 3 (at least 3) = 0 x \$200.00 \$0.00 (1201)/\$0.00 (2201) \$

If proper multiple dependent claims now added for first time, (ignore improper); add
\$360.00 (1203)/\$180.00 (2203) \$

Petition is hereby made to extend the current due date so as to cover the filing date of this
paper and attachment(s)
One Month Extension \$120.00 (1251)/\$60.00 (2251)
Two Month Extensions \$450.00 (1252)/\$225.00 (2252)
Three Month Extensions \$1020.00 (1253)/\$510.00 (2253)
Four Month Extensions \$1590.00 (1254)/\$795.00 (2254)
Five Month Extensions \$2160.00 (1255)/\$1080.00 (2255) \$

Terminal disclaimer enclosed, add \$130.00 (1814)/ \$65.00 (2814) \$

☐ Applicant claims "small entity" status. ☐ Statement filed herewith

Rule 56 Information Disclosure Statement Filing Fee \$180.00 (1806) \$ 0.00

Assignment Recording Fee \$40.00 (8021) \$ 0.00

Other: Declaration Under 37 CFR 1.132 of Masahide Sugiyama \$ 0.00

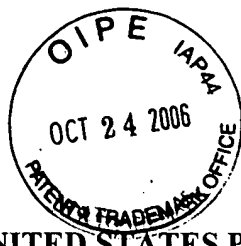
TOTAL FEE ENCLOSED \$ 0.00

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140. A duplicate copy of this sheet is attached.

901 North Glebe Road, 11th Floor
Arlington, Virginia 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100
ARC:eaw

NIXON & VANDERHYE P.C.
By Atty: Arthur R. Crawford, Reg. No. 25,327

Signature: _____



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

SUGIYAMA, M. et al.

Atty. Ref.: 427-83; Confirmation No. 5550

Appl. No. 10/659,358

TC/A.U. 1745

Filed: September 11, 2003

Examiner: Wills

For: SEPARATOR FOR LITHIUM ION SECONDARY BATTERY AND LITHIUM ION
SECONDARY BATTERY AND LITHIUM ION SECONDARY BATTERY PROVIDED
THEREWITH

* * * * *

October 24, 2006

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE

This is responsive to the Official Action of July 28, 2006. Claims 1-4, 7-9 and 12-15 remain pending in the application. The sole issue is the rejection of all of these claims as being unpatentable under 35 USC §103(a) over U.S. published application 2002/0142214 to Pekala et al. Applicants disagree with this rejection and in particular the manner in which the applied reference has been interpreted versus comparative evidence contained in the declaration of the senior inventor Mr. Sugiyama made April 5, 2006.

In preparing this response an error was noted in the April 5, 2006 declaration. Specifically, there is a typographical error in Table 4-1 for Comparative Example 6-2 in the Ionic Conductivity column. The correct value is 6.5×10^{-4} and not 6.5×10^{-3} . This error will be apparent from the second paragraph of the "III. Result" section. Submitted herewith is a corrected declaration from Mr. Sugiyama made October 23, 2006.

Regarding claim 1, the examiner states that

"[c]laims 1-4, 7-9 and 12-15 are rejected under 35 USC 103(a) as being unpatentable over Pekala et al U.S. Pub 2002/0142214 ... Although Pekala teaches a pore size of the external surface less than that of an interior in the porous layer, the reference does not expressly disclose an external surface pore size of 0.1 to 5 microns and interior of 0.5 to 10 microns in the porous layer."

Also, regarding the applicant's arguments, the examiner states that

"[t]he comparative example 6-3 shows an average pore interior of 0.4, which although outside of the claimed range, shows superior results with respect to air permeability, retention properties of the electrolytic solution and has significantly greater ionic conductivity than the invention. Therefore it would be reasonable to expect that so long as interior surface is greater than the exterior, irrespective of applicant's claimed range, superior results can be achieved."

Applicants disagree with this conclusion as it is inconsistent with the information contained in the declaration. The comparative example 6-3 of the declaration shows an average pore size of the interior surface is 0.4 which is outside of the claimed range and an inferior result with respect to the impregnation ratio of electrolytic solution (41% by weight) and ionic conductivity (7.1×10^{-4} S/cm).

Although the examiner states the comparative example 6-3 has significantly greater ionic conductivity than the invention, the ionic conductivity of the comparative example 6-3 is 7.1×10^{-4} S/cm and clearly inferior to that of the examples 10-1 and 10-2 of the present invention (5.1×10^{-3} S/cm and 2.8×10^{-3} S/cm, respectively).

In addition, simple test cells of Example 13 made using the separator obtained in the comparative example 6-3 show an *inferior* result with respect to volume retention ratio (65%) and adhesion (B), compared with those of the examples 15 and 16 of the present invention (more than 95% and A).

Therefore, the range claimed in claim 1 provides a superior result – this superior result is not suggested or taught by Pekala et al, because Pekala et al does not disclose an external surface pore size of 0.1 to 5 microns and interior of 0.5 to 10 microns in the porous layer as admitted in the first full paragraph of page 5 of the Action.

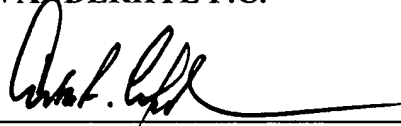
Accordingly, claim 1 should be allowed. Also, claims 2-4, 7-9 and 12-15 depend on claim 1 and thus these claims should be allowed as well.

For the above reasons it is respectfully submitted that the claims of this application define inventive subject matter. Withdrawal of the rejection and allowance are solicited. Should the examiner require further information, please contact the undersigned.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____



Arthur R. Crawford
Reg. No. 25,327

ARC:eaw
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100